Claims:

1. A method for defining particle emissions from exhaust gases of a combustion engine in an exhaust pipe system or a corresponding exhaust gas duct (E) substantially during the use, in which method emitted particles contained in the exhaust gas are charged and the particle emissions are determined by measuring the electric charge carried by the emitted particles in said exhaust gas duct (E), **characterized** in that the emitted particles are charged by varying the way of charging or the charging power with respect to time in such a manner that, as a result of said charging, emitted particles brought to at least two different electric charge states are present, wherein the charge of the emitted particles is further defined as a difference value/values measured from the emitted particles brought to said at least two different electric charge states.

2. The method according to claim 1, **characterized** in that the charging of the emitted particles is performed in a limited sample volume (VT) supplied with exhaust gas, to which ions and/or electrons are introduced by varying their content or polarity in time in a cyclic or pulse-like manner.

3. The method according to claim 2, **characterized** in that the charging power is varied in said sample volume (VT) substantially between on and off modes.

4. The method according to claim 2, **characterized** in that the way of charging is varied in said sample volume (VT) substantially between negative charging and positive charging.

5. The method according to any of the preceding claims, **characterized** in that the emitted particles are charged on the basis of electric corona discharge.

6. The method according to any of the preceding claims, **characterized** in that the electric charge obtained by the emitted particles is

determined as the net charge (Inet) obtained by them during the charging.

7. The method according to claim 6, **characterized** in that the emitted particles are charged galvanically by means of a charger (C) separated from the rest of the system, and that the net charge (Inet) obtained by the emitted particles is determined by measuring the discharging current carried along by them from said charger (C), which discharging current is measured between said charger (C) and a point in a galvanic contact with the wall of the exhaust gas duct (E).

8. A sensor device for determining particle emissions from exhaust gases of a combustion engine in an exhaust pipe system or a corresponding exhaust gas duct (E) substantially during the use, which device comprises at least one charger (C) arranged in said exhaust gas duct (E) for charging emitted particles contained in the exhaust gas, and at least one charge measuring means (D) arranged in said exhaust gas duct (E) for measuring the electric charge carried by the emitted particles, **characterized** in that said at least one charger (C) is arranged to charge the emitted particles by varying the way of charging or the charging power with respect to time in such a manner that emitted particles brought to at least two different electric charge states are present, wherein said at least one charge measuring means (D) is arranged to determine the charge of the emitted particles as a difference value/values measured from the emitted particles brought to said at least two different electric charge states.

9. The sensor device according to claim 8, **characterized** in that said sensor device comprises means (N, NS) for forming a limited sample volume (VT), to which sample volume and to the exhaust gas introduced therein said at least one charger (C) is arranged to produce ions and/or electrons by varying their content or polarity in cycles or in a pulse-like manner by varying the charging power or the way of charging of the charger (C).

10. The sensor device according to claim 9, **characterized** in that said means for forming the limited sample volume consist of a single

electrode (N) having a net-like or other structure which is permeable to the flow of the exhaust gas and the emitted particles contained therein, or of several electrodes (NS) of the above-mentioned kind within each other.

11. The sensor device according to any of the preceding claims 8 to 10, **characterized** in that the charging power of said at least one charger (C) is varied substantially between on and off states.

12. The sensor device according to any of the preceding claims 8 to 11, **characterized** in that the way of charging said at least one charger (C) is varied substantially between negative charging and positive charging.

13. The sensor device according to any of the preceding claims 8 to 12, **characterized** in that said at least one charger (C) is a charger based on thermal emission.

14. The sensor device according to any of the preceding claims 8 to 12, **characterized** in that said at least one charger (C) is a charger based on the use of electromagnetic radiation.

15. The sensor device according to any of the preceding claims 8 to 14, **characterized** in that said at least one charger (C) and said at least one charge measuring means (D) are structurally integrated to form substantially one sensor structure (C, D).

16. The sensor device according to any of the preceding claims 8 to 14, **characterized** in that said at least one charger (C) is arranged to be separate, before said at least one charge measuring means (D) in the flow direction of the exhaust gas in the exhaust gas duct (E).

17. The sensor device according to any of the preceding claims 8 to 16, **characterized** in that said at least one charge measuring means (D) is arranged to determine the electric charge obtained by the emitted particles as the net charge (Inet) obtained by them from said at least one charger (C).

18. The sensor device according to claim 17, **characterized** in that said at least one charger (C) is galvanically separated from the rest of the system and that said at least one charge measuring means (D) is arranged to determine the net charge (Inet) obtained by the emitted particles by measuring the discharging current carried along by them from said charger (C), which discharging current is measured between said charger (C) and a point in a galvanic contact with the wall of the exhaust gas duct (E).

19. The sensor device according to any of the preceding claims 8 to 18, **characterized** in that the sensor device also comprises means for cooling said at least one charger (C) and/or said at least one charge measuring means (D) and components related thereto, by means of a gas flow.

20. The sensor device according to claim 19, **characterized** in that said gas flow is led through the structures of the sensor device and further into the exhaust gas duct (D) through one or more porous and/or perforated components (SC) used as an electrical insulator, to cool said component and to prevent its soiling.

21. The sensor device according to any of the preceding claims 8 to 20, **characterized** in that the sensor device comprises means (N, NS, EG) for eliminating noise currents caused by internal changes in the electric fields in the sensor device, on the basis of electrostatic shielding.